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3 ; Author : ADI - Apps

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5 ; Date : December 1999

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7 ; File : Tim2DeB.asm

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9 ; Hardware : ADuC824

10 ;

11 ; Description : Code example to show how the debugger can be 'halted'.

12 ; i.e. if user code does not appear to be executing

13 ; correctly and seems to have missed the breakpoints

14 ; then you can halt (stop) the ADuC824 from running

15 ; and examine where code is being executed from.

16 ;

17 ; The debugger uses timer 2 as the baudrate generater

18 ; on the ADuC824. When timer 2 is used as a baudrate

19 ; generator it does not generate timer 2 interrupts

20 ; using the TF2 flag. However the EXF2 flag can still

21 ; be used to generate a 3rd external interrupt. Usually

22 ; this extra option is not used however.

23 ;

24 ; In order to halt the ADuC824 the following code must

25 ; be included in code before it is assembled. A

26 ; breakpoint must be set on the RETI instruction of

27 ; the TIMER 2 ISR. Hence if the code goes 'missing'

28 ; and the T2EX pin (Pin 2) grounded then a Timer 2

29 ; interrupt will occur hitting your breakpoint. Single

30 ; stepping over the RETI instruction will show you

31 ; where the code was executing.

32 ;

33 ; NOTE: On the ADuC824 evalutaion board the T2EX pin

34 ; appears at J3.7. A ground connection is provided

35 ; at J2.8 directly across from it. Hence connecting

36 ; a link here will cause the timer 2 interrupt.

37 ;

38 ; The following code example shows how this approach

39 ; could be used around the simple blink routine

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43 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

44 $MOD824 ;Use 8052 predefined Symbols

45

00B4 46 LED EQU P3.4

47

48 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

49 ; BEGINNING OF CODE

---- 50 CSEG

0000 51 ORG 0000H

0000 02002E 52 JMP MAIN

53

54 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

55 ; INT0 ISR

0003 56 ORG 0003h

0003 04 57 INC A ; Increment Acc

0004 32 58 RETI ; Return from Interrupt

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59 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

60 ; TIMER 2 INTERRUPT ROUTINE

002B 61 ORG 002Bh

002B C2CE 62 CLR EXF2

002D 32 63 RETI ; <-- SET B'POINt here in Debugger

64 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

65 ; MAIN PROGRAM

002E 66 MAIN:

67

68 ; the following 3 lines configures the timer 2 interrupt to halt the

69 ; ADuC824. Note if the SETB EA instruction is already in the code

70 ; then this is unnecessary

002E 43C808 71 ORL T2CON, #08h ; set EXEN2 without effecting baud rate

0031 D2AD 72 SETB ET2

0033 D2AF 73 SETB EA

74

75 ; USER CODE GOES HERE......

0035 D288 76 SETB IT0 ; INT0 edge triggered

0037 D2AF 77 SETB EA ; enable inturrupts

0039 D2A8 78 SETB EX0 ; enable INT0

79

003B 7401 80 MOV A,#01H ; Initialize A -> 1

003D 81 BLINK:

003D B2B4 82 CPL LED ; blink LED using compliment instruction

003F 120044 83 CALL DELAY ; Call subroutine DELAY

0042 80F9 84 JMP BLINK

85

86 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

87 ; DELAY

0044 88 DELAY: ; Delays by 100ms \* A

0044 F8 89 MOV R0,A ; Acc holds delay variable

0045 7919 90 DLY0: MOV R1,#019h ; Set up delay loop0

0047 7AFE 91 DLY1: MOV R2,#0FEh ; Set up delay loop1

0049 DAFE 92 DJNZ R2,$ ; Dec R2 & Jump here until R2 is 0

004B D9FA 93 DJNZ R1,DLY1 ; Dec R1 & Jump DLY1 until R1 is 0

004D D8F6 94 DJNZ R0,DLY0 ; Dec R0 & Jump DLY0 until R0 is 0

004F 22 95 RET ; Return from subroutine

96 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

97

98 END

VERSION 1.2h ASSEMBLY COMPLETE, 0 ERRORS FOUND

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BLINK. . . . . . . . . . . . . . C ADDR 003DH

DELAY. . . . . . . . . . . . . . C ADDR 0044H

DLY0 . . . . . . . . . . . . . . C ADDR 0045H

DLY1 . . . . . . . . . . . . . . C ADDR 0047H

EA . . . . . . . . . . . . . . . B ADDR 00AFH PREDEFINED

ET2. . . . . . . . . . . . . . . B ADDR 00ADH PREDEFINED

EX0. . . . . . . . . . . . . . . B ADDR 00A8H PREDEFINED

EXF2 . . . . . . . . . . . . . . B ADDR 00CEH PREDEFINED

IT0. . . . . . . . . . . . . . . B ADDR 0088H PREDEFINED

LED. . . . . . . . . . . . . . . NUMB 00B4H

MAIN . . . . . . . . . . . . . . C ADDR 002EH

P3 . . . . . . . . . . . . . . . D ADDR 00B0H PREDEFINED

T2CON. . . . . . . . . . . . . . D ADDR 00C8H PREDEFINED